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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,561	11/13/2003	Takehiro Zukawa	82478-2000	8809

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EXAMINER

PERRY, ANTHONY T

ART UNIT	PAPER NUMBER
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2879

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/712,561

Applicant(s)

ZUKAWA ET AL.

Examiner

Anthony T. Perry

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 14-19,32,33,36 and 37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13,20-31,34-35 is/are rejected.
- 7) ☒ Claim(s) 30 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

This application contains claims 14-19 and 32-33 drawn to an invention nonelected without traverse in the reply filed 4/27/06. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Newly submitted claims, 36-37, are directed to a species which was not claimed in the originally filed application, and are independent or distinct from the invention originally claimed for the following reasons:

New independent claim 36 includes a group of materials that can be used as the photocatalyst within the PDP. The only material originally claimed was titanium dioxide, which is not present in the group claimed in claim 36. Therefore claims 36-37 require a different search that is independent from the claims originally filed.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 22-28 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Objections

Claims 30 and 31 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Independent claim 1, as amended, already includes the limitation of a main component of each of the photocatalysts being titanium dioxide in anatase form.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 34 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The Examiner did not find any support in the specification as filed reciting a "nitride layer" included on the photocatalyst. The Examiner has found support for performing a nitriding process to the photocatalyst, but is under the impression that while performing a nitriding process does cause nitrogen to be absorbed in the material being processed, it does not necessarily result in a layer of nitride formed on the material.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11, and 20-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2000-011885.

Regarding claims 1-2, 10-11, and 29-31, JP 2000-011885 discloses a plasma display panel that emits visible light caused by an ultraviolet ray from a discharge generated in a discharge medium including a rare gas, the light emitting device comprising: a vessel that is hermetically sealed and contains the discharge medium; a phosphorous material disposed in the vessel (6a); and one or more photocatalysts (5a) that are disposed at one or more first areas inside the vessel, the first areas being reachable for one or both of the ultraviolet ray and light emitted from the phosphorous material, and are in contact with the discharge medium (See Fig. 4 and Fig. 5). The vessel is made of at least a first substrate (1) and a second substrate (not shown) that oppose each other and are inherently sealed together around edges thereof, a plurality of ribs (4) are formed on the first substrate (1), in each of at least one of second areas provided between the ribs, the phosphorous material forms one or more phosphor layers on one or more walls that surround the second area, and at least one of the photocatalysts (5a) is disposed at a position in the second area in which the phosphor layer (6a) is formed. JP 2000-011885 discloses the use of titanium dioxide as the photocatalyst. The reference does not specifically state what form of titanium dioxide is used. It has been held to be within the general skill of a worker in the art to

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select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have use titanium dioxide in anatase form, since the selection of known materials for a known purpose is within the skill of the art. Titanium dioxide in anatase form is known for its excellent light shielding/reflecting properties. Titanium dioxide has an absorption edge within a visible light range.

Regarding claims 3 and 7-9, Fig. 4 shows the photocatalysts (5a) distributed throughout the phosphor layer (6). When absorbing an ultraviolet ray, each phosphor layer emits light in a color that is common to the phosphor layers in that second area, the color being one of red, green, and blue, the photocatalysts each have an absorption edge in one of two or more wavelength bands that are different from each other, and which wavelength band the absorption edge of each photocatalyst is within is determined according to the color of the light emitted from the phosphor layer that is disposed in vicinity thereof. The second areas are the cells formed between adjacent barrier ribs (4) and the phosphors (6a) alternate red, blue, and green between adjacent cells. JP 2000-011885 teaches that the photocatalyst particles (5a) which are formed in each of the individual cells (all of the second areas) are made of titanium dioxide. Titanium dioxide has an absorption edge within a wavelength band of green and blue, generally between 380nm and 550nm.

Regarding claims 4-6, Fig. 5 shows the phosphor layers (6) are porous allowing discharge medium to pass through and the photocatalysts are disposed between the first substrate (1) and the phosphor layers (6), between the ribs (4) and the phosphor layers (6), disposed in the vicinity of the top of the ribs (4), and in contact with the phosphor layer (6).

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Regarding claims 20-28, when absorbing an ultraviolet ray, each phosphor layer emits light in a color that is common to the phosphor layers in that second area, the color being one of red, green, and blue, the photocatalysts each have an absorption edge in one of two or more wavelength bands that are different from each other, and which wavelength band the absorption edge of each photocatalyst is within is determined according to the color of the light emitted from the phosphor layer that is disposed in vicinity thereof. The second areas are the cells formed between adjacent barrier ribs (4) and the phosphors (6) alternate red, blue, and green between adjacent cells. JP 2000-011885 teaches that the photocatalyst layer (5) which are formed in each of the individual cells (all of the second areas) are made of titanium dioxide. Titanium dioxide has an absorption edge within a wavelength band of green and blue, generally between 380nm and 550nm.

Claims 1, 12-13, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tadaki et al. (US 2001/0054871).

Regarding claims 1, 12-13, and 35, Tadaki et al. disclose a plasma display panel that emits visible light caused by an ultraviolet ray from a discharge generated in a discharge medium including a rare gas, the light emitting device comprising: a vessel that is hermetically sealed and contains the discharge medium; a phosphorous material (28R,28G,28B) disposed in the vessel; and one or more photocatalysts (33) that are disposed at one or more first areas inside the vessel, the first areas being reachable for one or both of the ultraviolet ray and light emitted from the phosphorous material, and are in contact with the discharge medium (See for example Fig. 2 and description). The vessel is made of at least a first substrate (21) and a second substrate (11) that oppose each other and are inherently sealed together around edges thereof. Tadaki discloses the

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photocatalyst layer (33) formed over the entire first substrate (21). The photocatalysts are disposed in regions outside and inside of the image display area in which the phosphorous material is disposed. Since the photocatalyst is disposed on the entire surface of the first substrate and the first substrate is bonded to the second substrate the photocatalyst is disposed in the vicinity of the edges the substrates. Tadaki et al. disclose the use of titanium dioxide as the photocatalyst. The reference does not specifically state what form of titanium dioxide is used. It has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have use titanium dioxide in anatase form, since the selection of known materials for a known purpose is within the skill of the art. Titanium dioxide in anatase form is known for its excellent light shielding/reflecting properties. Titanium dioxide has an absorption edge within a visible light range.

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2000-011885 in view of Morikawa et al. (US 6,835,688).

Regarding claim 34, as pointed out above, the current specification does not specifically recite a nitride layer on the photocatalyst, but does teach the photocatalyst undergoing a nitriding process. Morikawa teaches performing a nitriding process on the photocatalyst (titanium dioxide) in order to increase the absorption edge of the visible light bandwidth such that the reflectance across the entire visible light range is steady. Accordingly, it would have been obvious to one of ordinary skill in the art to perform a nitriding process on the photocatalyst (titanium dioxide) of the JP 2000-011885 reference in order to increase the reflectance of the

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lower wavelengths providing a uniform amount of reflectance across the visible wavelength range (red, green, and blue light produced by the respective phosphors are reflected by the same amount).

Other Prior Art Cited

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Roche et al. (US 6,774,562) provides evidence that the use of titanium oxide in anatase form is well known in the art for providing a white reflecting material (col. 3, lines 58-63).

Van den Bergh et al. (US 6,815,092) provides evidence that the use of titanium oxide in anatase form is well known in the art for providing a white reflecting material (col. 4, lines 49-51 and col. 6, lines 49-51).

Wada et al. (US 4,692,662) provides evidence that the use of titanium oxide in anatase form is well known in the art for providing a white reflecting material (col. 7, lines 53-61).

Response to Arguments

Applicant's arguments filed on 10/24/06 have been fully considered but they are not persuasive.

In response to applicant's argument that JP 2000-011885 and Tadaki don't provide titanium dioxide in order to decompose impurities within the PDP, the Examiner agrees. However, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

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Regarding the Applicant's arguments that it would not have been obvious to use titanium oxide in the anatase form, the Examiner directs the Applicant to the "Other Prior art Cited" section. Roche et al. (US 6,774,562); Van den Bergh et al. (US 6,815,092); and Wada et al. (US 4,692,662) all show proof that titanium oxide in anatase form is well known in the art for providing a white reflecting material. It has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have use titanium dioxide in anatase form, since the selection of known materials for a known purpose is within the skill of the art. The use of titanium dioxide in anatase form as white reflecting materials is well known in the art due to its excellent light shielding/reflecting properties.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Anthony Perry* whose telephone number is **(571) 272-2459**. The examiner can normally be reached between the hours of 9:00AM to 5:30PM Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (571) 272-2457. **The fax phone number for this Group is (571) 273-8300.**

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anthony Perry
Patent Examiner
Art Unit 2879
February 20, 2007



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